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TRAFFIC STUDY
LA SALLE ROAD
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LaSALLE ROAD STUDY

S-7 (6)

PREPARED FOR

MONTANA STATE HIGHWAY COMMISSION

BY

PLANNING SURVEY SECTION

AND

TRAFFIC ENGINEERING SECTION

IN COOPERATION WITH

US DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

March 22, 1967

TRAFFIC STUDY - LaSALLE ROAD
PROJECT S-7(6)

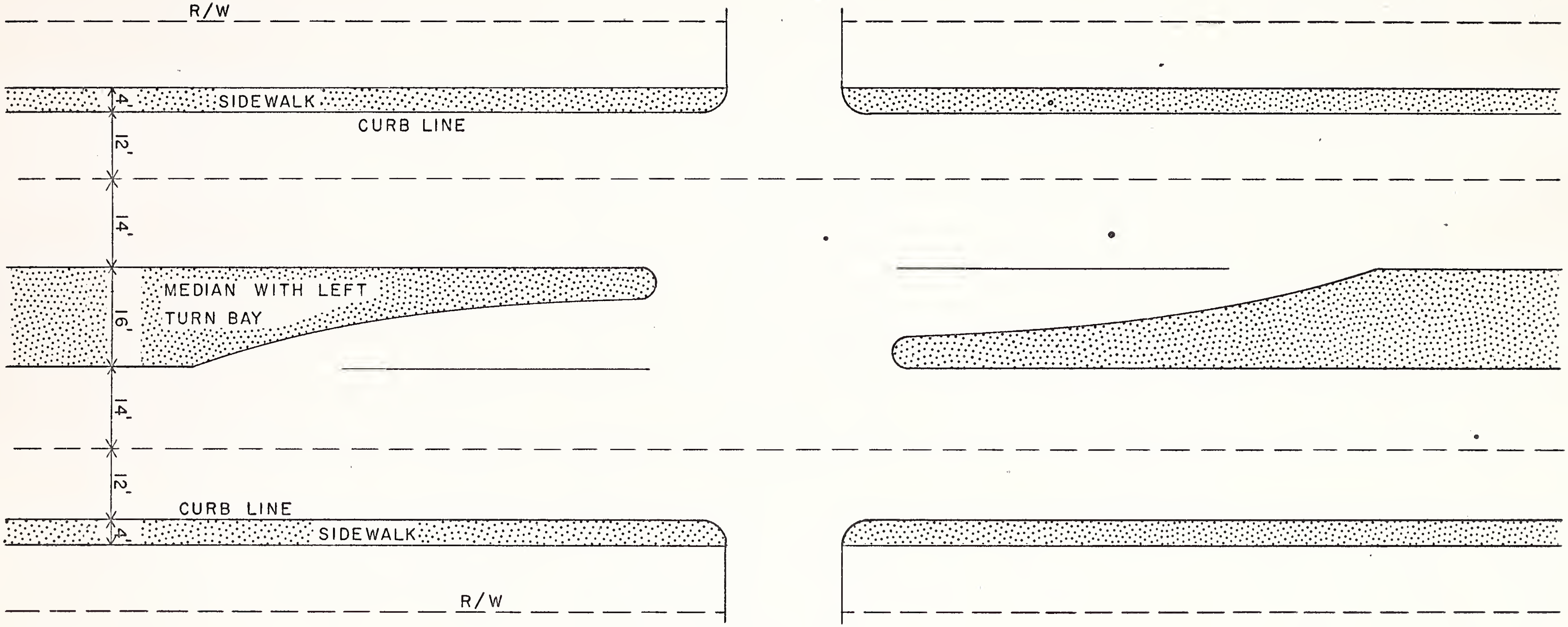
Project S-7(6), located on the LaSalle Road near Kalispell, was constructed in 1962 for a distance of 6.5 miles. The project begins at the junction of US 2 on the south and ends near the Kalispell Airport on the north. Traffic volumes on the southend were approaching the warrants for four-lanes at the time the design was finalized and it was, therefore, decided to construct a four-lane section for a distance of approximately 1.9 miles through the Evergreen District.

The four-lane section was designed and constructed with one twelve and one fourteen foot traffic lane on either side of a sixteen foot curbed median as shown in Exhibit 1. The entire cross section is 68 feet wide, including integral curb and gutter with no parking. Left-turn-bays were provided in the 16 foot median at 10 locations where existing county roads intersected the project. At four locations, between existing roads, median breaks were provided without left-turn-bays. The longest distance between median breaks is approximately 1,200 feet with other breaks occurring at 1,050 and 920 foot intervals.

Due to the lack of a uniform grid street system in the Evergreen area and the resulting long intervals between median breaks, it is necessary to negotiate U turns at the median breaks in order to reach destinations on the opposite side of the median. The alternate to the U turn movements is to drive illegally against traffic between median openings.

Numerous private driveways are necessary to serve the intensive suburban development on both sides of the LaSalle Road. The private

LA SALLE RD. — S-7 (6)
PLAN VIEW OF PRESENT ROADWAY



Scale 1" = 25'

EXHIBIT 1

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https://archive.org/details/lasalleroadstudy00mont

driveways were constructed to a 16 foot standard width with no curb returns. Due to the absence of parking lanes it is impossible to turn right into the narrow private driveways from the curb lane without mounting the curb on either side of the driveway. Most turns into private drive ways are now being made from the inside land in order to gain the necessary radius.

The residents of the Evergreen area have voiced considerable concern over the unsafe traffic conditions and the inconvenience caused by the curbed medians on both US 2 and the LaSalle Road. Consequently, at their November meeting, the Highway Commission directed that a traffic observation study be made on the LaSalle Road and US 2 to determine the kinds of traffic interference occurring in these areas as a result of the medians. This study was to be made by the Planning Survey Section in cooperation with the Traffic Engineering Section.

A field inspection of the site was made and the traffic on both highways was observed during both peak and off-peak hours. As a result of this preliminary study it was determined that the medians and channelization on US 2 were operating satisfactorily with no noticeable interference with traffic movements.

The medians on the LaSalle Road, however, were apparently creating a traffic hazard when vehicles attempted to negotiate a U turn around the nose. During the initial inspection, several passenger cars were observed blocking both lanes while they attempted to make the necessary U turns. Several trial turning movements were also made with a State passenger car at median openings with and without left-turn-bays. If the passenger car was positioned properly in the left-turn-bay it was

impossible to negotiate a U turn without hitting the left curb with the front wheels, as indicated in Exhibit 2. This maneuver effectively blocked both opposing lanes of traffic while the turning vehicle backed up in order to complete the turn, or ran over curb, sidewalk and private property, as shown in the photos in Exhibit 3, 4, 5, and 6. At the median openings without left-turn-bays, U turns can be made without hitting the opposite or left curb. However, the vehicle attempting the turning movement is exposed to the possibility of a rear end collision while it is waiting for a break in opposing traffic. Exhibit 2 also illustrates a turning movement by a standard passenger car at a median opening without left-turn-bays.

The traffic study made on the four-lane section of S-7(6) included the following items.

1. Traffic volume counts taken by machine for approximately 5 days during December and February to determine the average daily traffic.
2. Turning movement counts taken during peak-hours at the following selected locations to determine the amount of U turns and wrong-way movements.

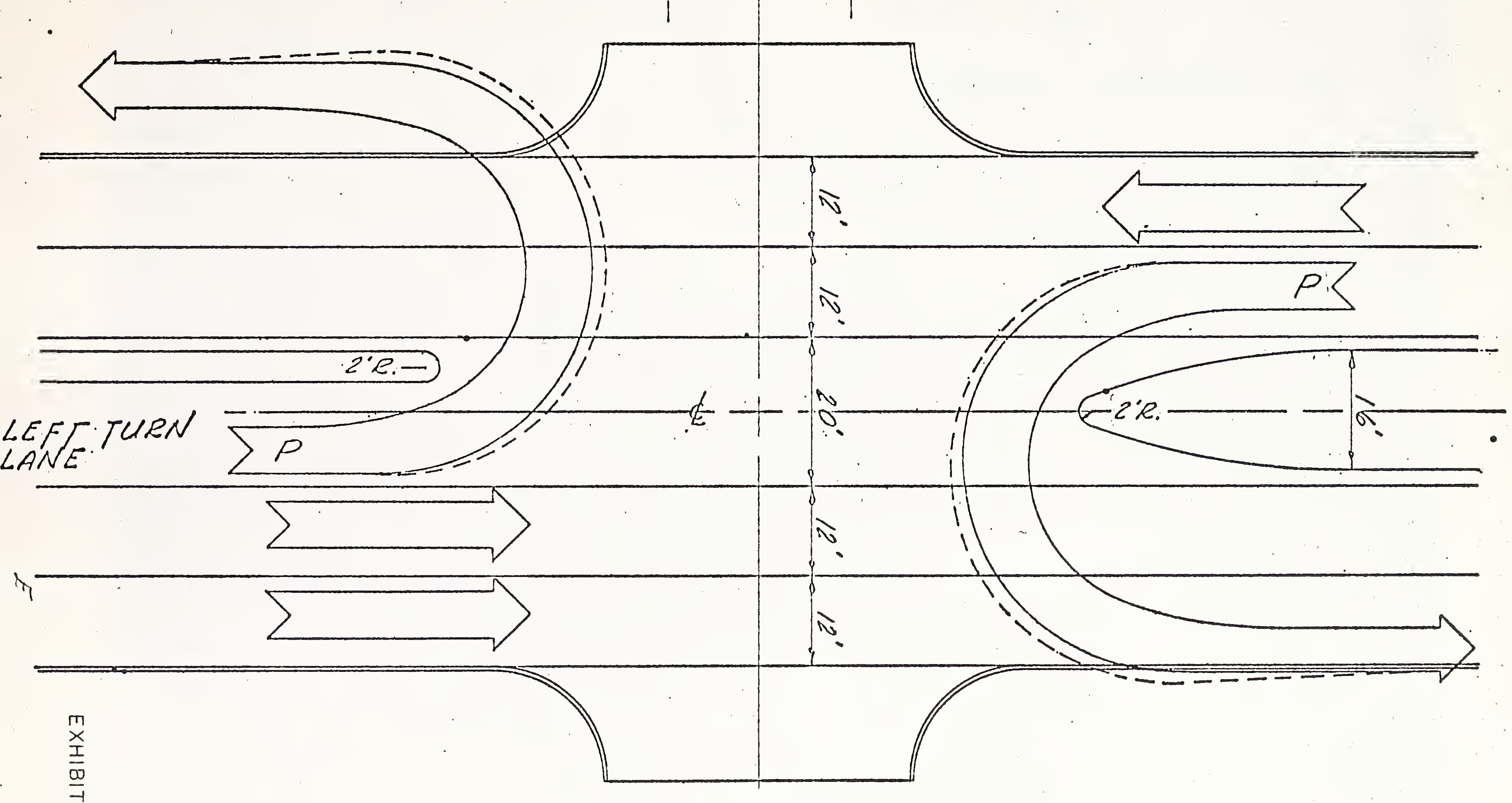
   Cottonwood Drive

   Median break at approximate station 26 + 00
   0.5 mile north of US 2

   Evergreen Drive

   Poplar Drive
3. A study of traffic accidents for the 5 year period from 1962 through 1966.
4. Both still and motion pictures were taken of U turns illegal traffic movements.

LA SALLE ROAD
REQUIRED TURNING RADIUS
STANDARD PASSENGER CAR



SCALE 1" = 20'

BASED ON A PASSENGER
DESIGN VEHICLE, MIN. 28'
OUTSIDE TURNING RADIUS

EXHIBIT 2

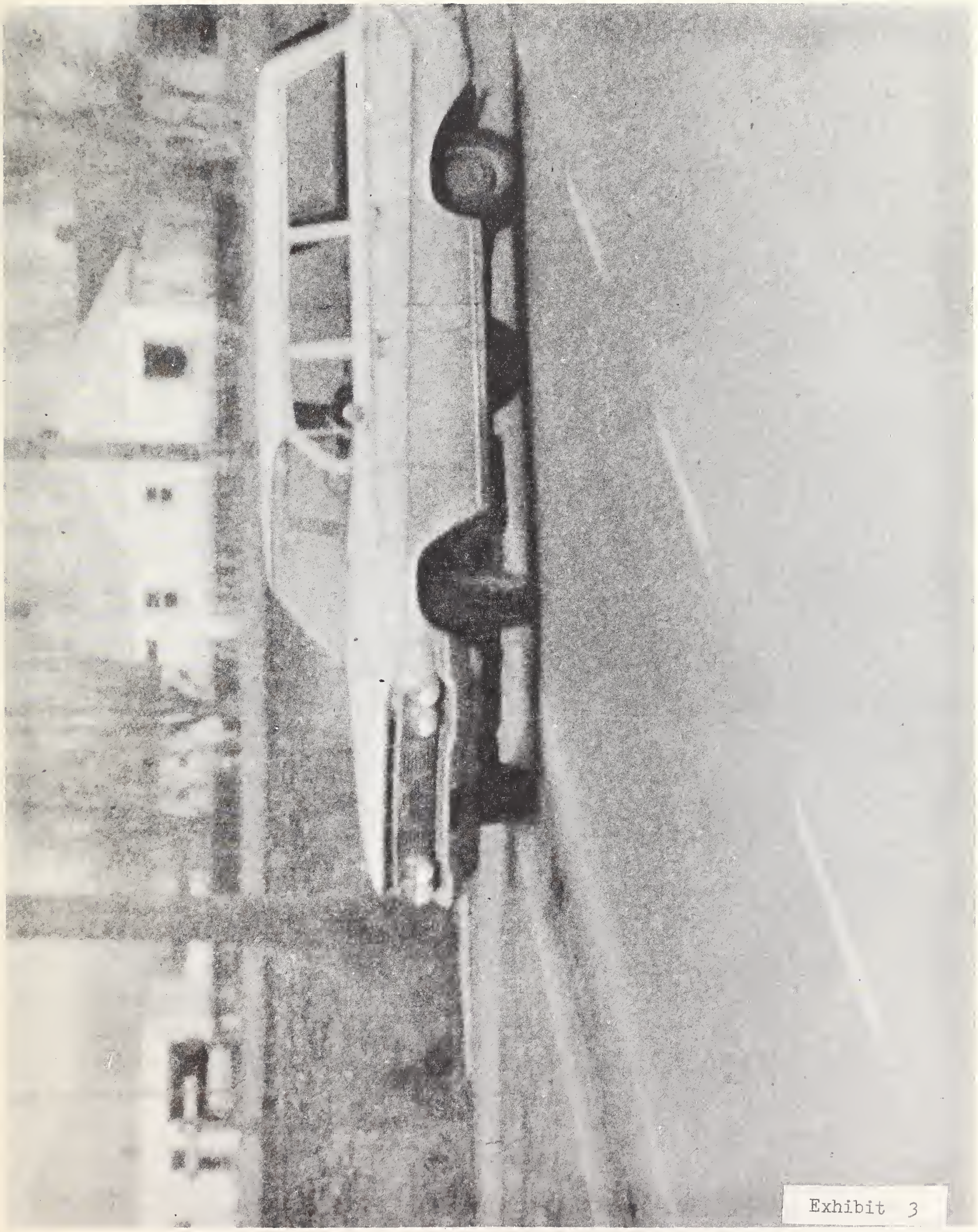


Exhibit 3

Exhibit 4

Exhibit 5

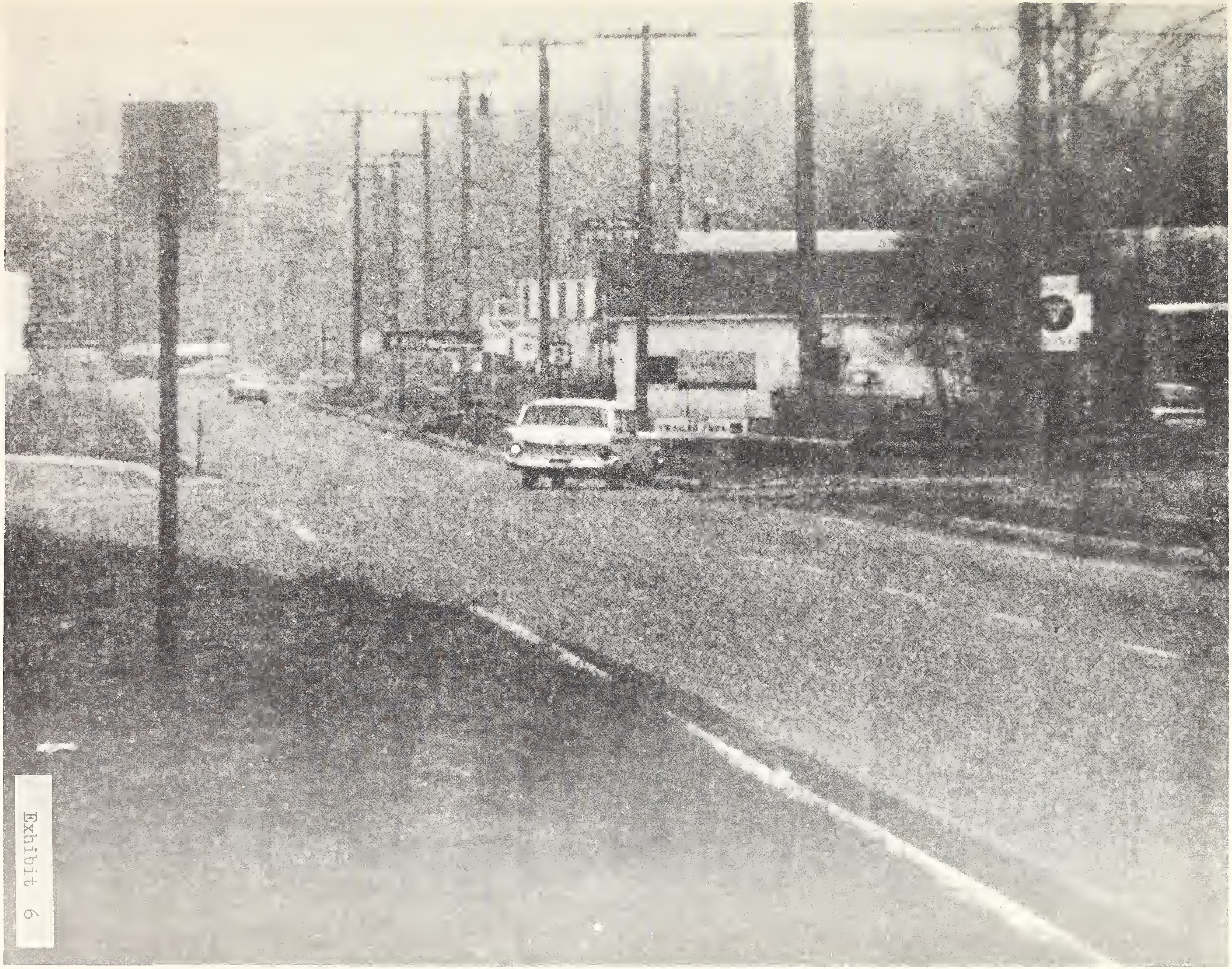


Exhibit 6

The results of the volume traffic counts taken in December and February indicate an average daily traffic of 5,100 vehicles per day at the south end of the four-lane section. The peak-hour of travel occurred between 4 and 5 p.m. when 511 vehicles were counted. The 5,100 vehicles per day that are presently using this facility represent an increase of 55 percent over the 3,290 vehicles that were using this road before construction in 1961.

Exhibits 7 through 10 illustrate the results of turning movement counts taken at four locations during the hours of 7:30 to 10:30 a.m., 11 a.m. to 2 p.m. and 4 p.m. to 6 p.m. Approximately 53 percent of the 24 hour traffic was counted during these 8 hours.

As shown in Exhibit 7 a total of 40 northbound vehicles made U turns at the median opening at Cottonwood Drive during an 8-hour period. These vehicles either had to backup after hitting the west curb or make the turn from one of the traffic lanes. These 40 vehicles represent about 3.5 percent of the total northbound traffic during the 8-hour period. A total of 9 southbound vehicles turned north by making a U turn around the median, at the same intersection.

Exhibit 8 shows a total of 32 northbound vehicles making a U turn to the south at the median opening about 0.5 mile north of US 2. Three vehicles turned from south to north during the same 8-hour period. There are no left-turn-bays at this median opening. Consequently, the U turns can be made without hitting the opposite curb but the vehicles making this maneuver are exposed to rear end collisions while waiting for a break in opposing traffic.

The 8 hour count taken at the intersection of Evergreen Drive is

shown in Exhibit 9. There were no vehicles that turned from north to south and only 9 turned from south to north around the medians at this intersection. The lack of turning movements from north to south can be explained by the lack of development on the westside of LaSalle Road between Evergreen Drive and the next median opening to the south.

Exhibit 10 illustrates turning movements of traffic counted at Poplar Drive during an 8 hour period. Thirty vehicles turned from north to south and one vehicle turned from south to north. The thirty vehicles represent about 3.5 percent of the total northbound traffic.

These turning movement counts indicate that approximately 3.5 percent of the total northbound traffic is now making U turns around the medians to reach destinations on the westside of LaSalle Road. Southbound traffic turning north amounted to about one-half of one percent.

The traffic accident study that was made on the four-lane section of the LaSalle Road indicates that there were 27 accidents reported from 1962 through 1966. One person was killed and 10 were injured during the five year period.

The following tabulation summarizes the reported accidents by general categories.

	NUMBER OF ACCIDENTS			
	Property Damage	Injury	Fatal	Total
Accidents involving U turns	6	1	1	8
Rear end collisions	4			4
Others	9	6	—	15
TOTAL	19	7	1	27

TURNING MOVEMENTS
LA SALLE RD. & COTTONWOOD DR.
8 HRS FEB. 1, 1967

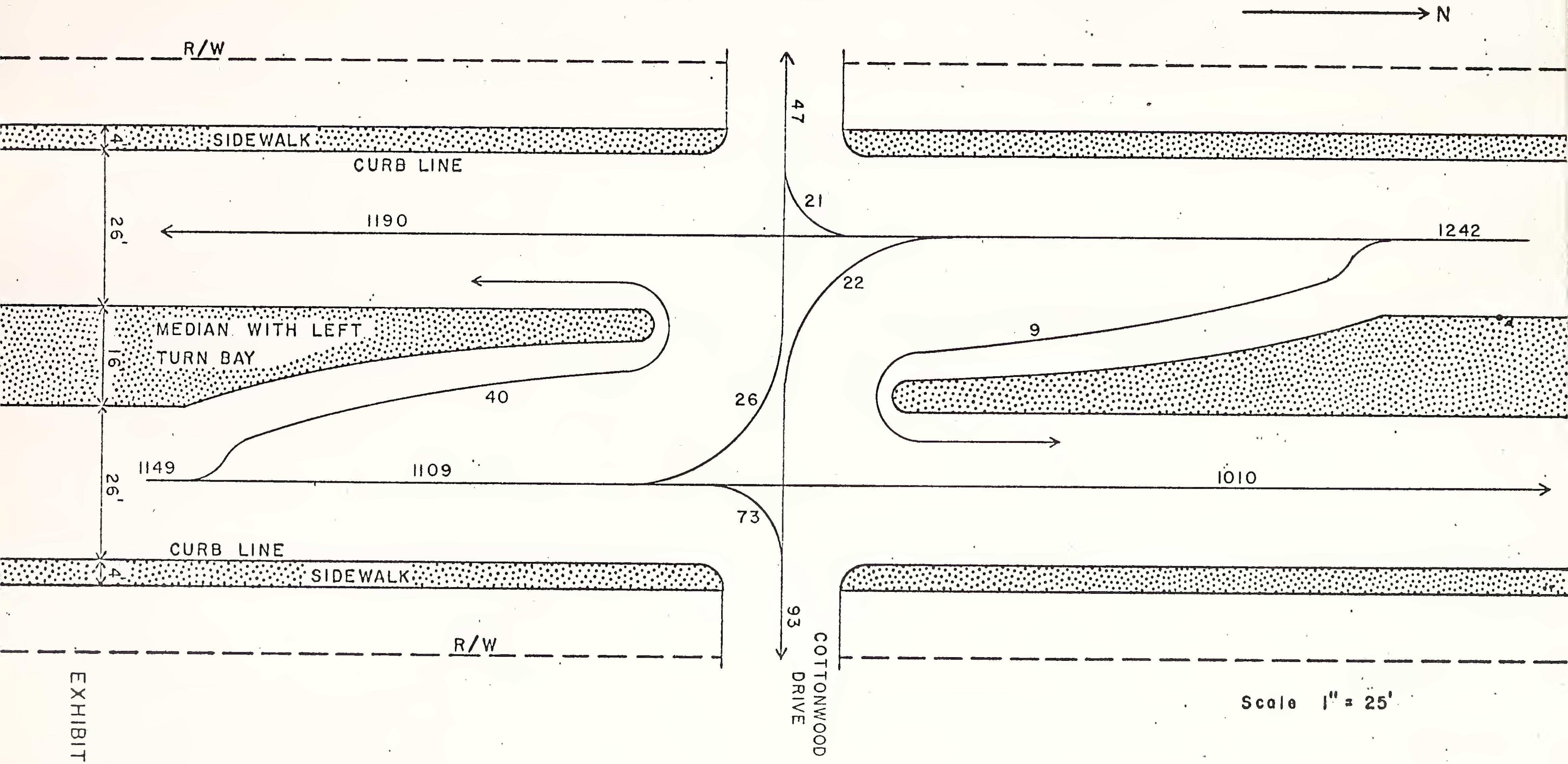


EXHIBIT 7

TURNING MOVEMENTS
MEDIAN BREAK LASALLE RD.
STA. 26+00
8 HRS. DEC. 14, 1966

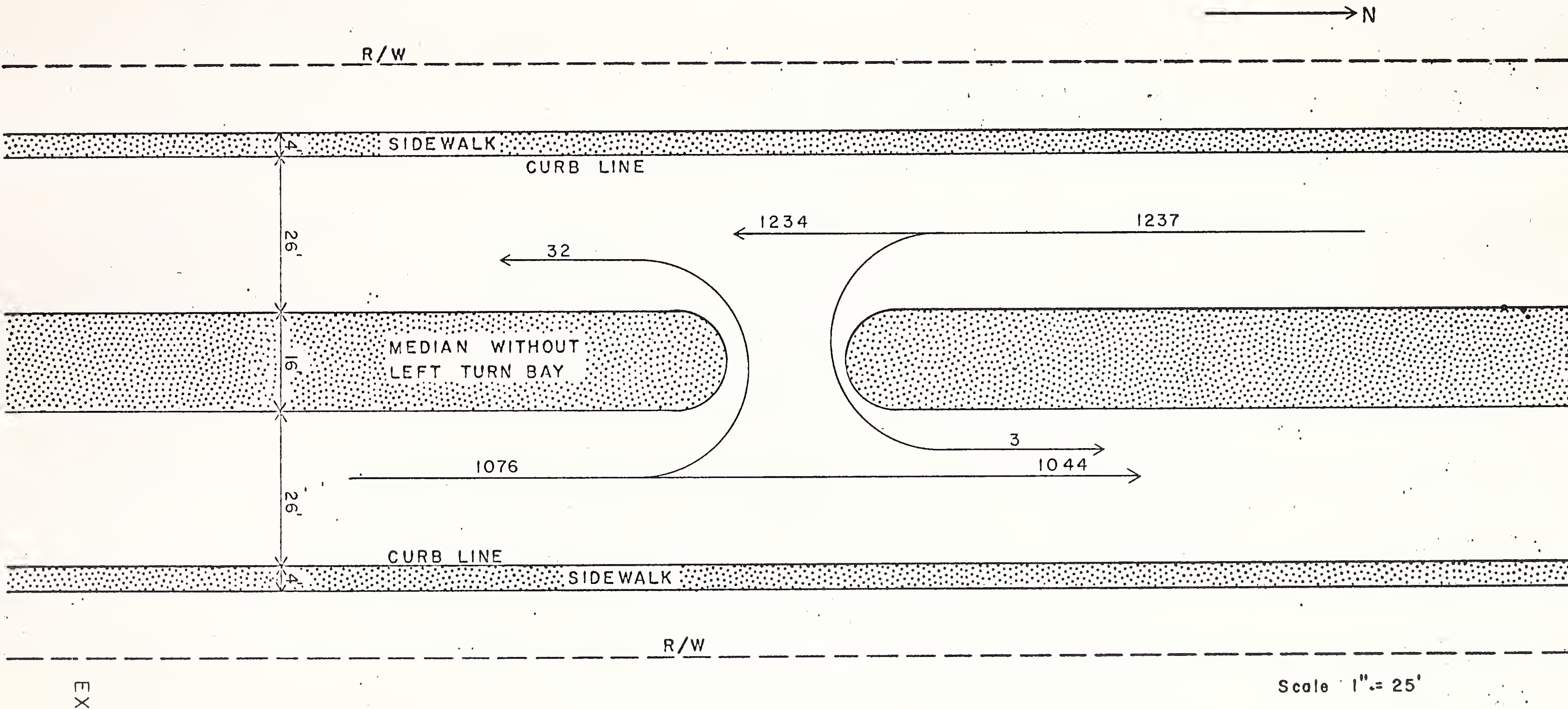


EXHIBIT 8

TURNING MOVEMENTS
LA SALLE RD. & EVERGREEN DR.
8 HRS. DEC. 15, 1966

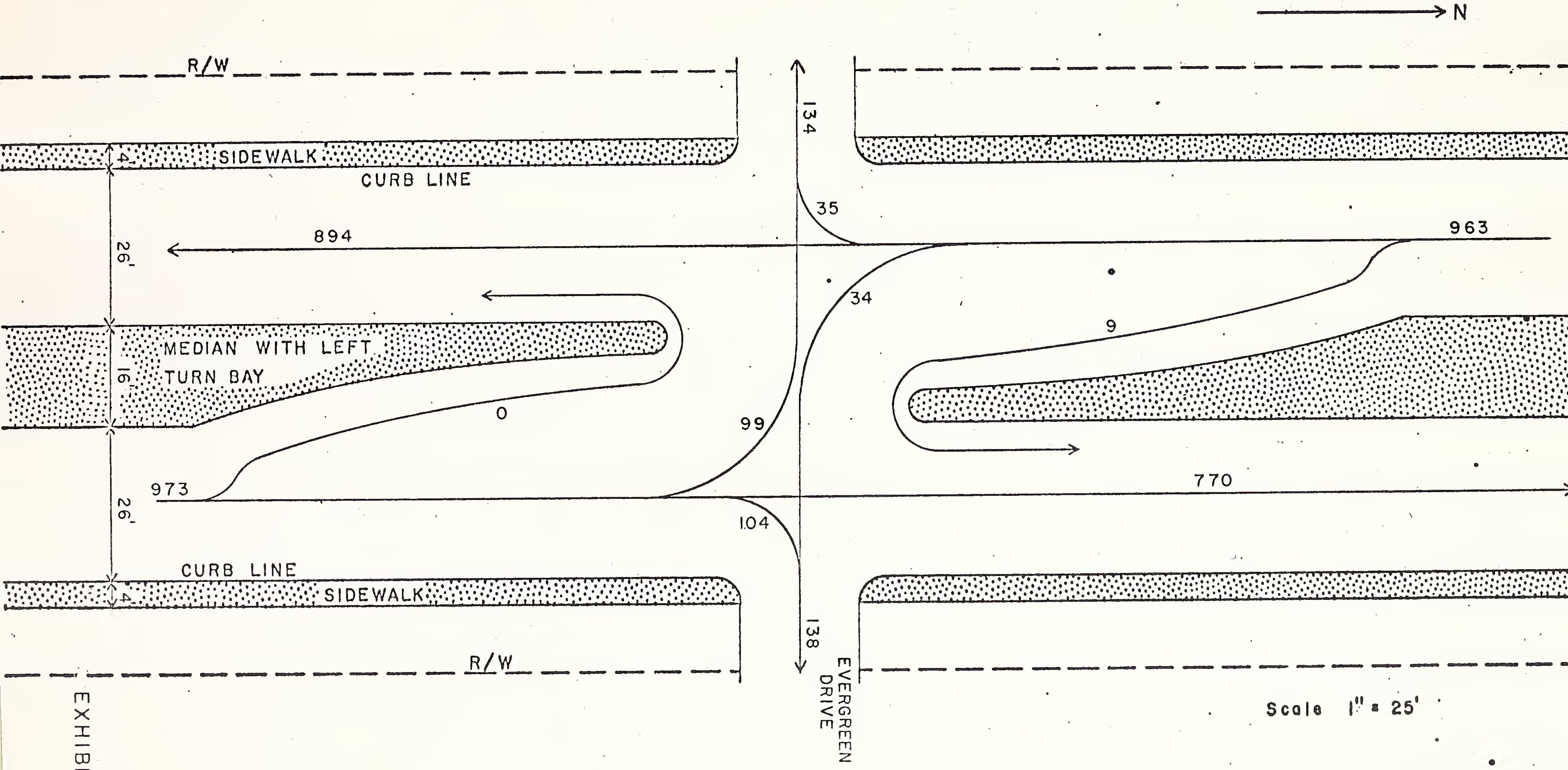


EXHIBIT 9

TURNING MOVEMENTS
LA SALLE RD. & POPLAR DR.
8 HRS. FEB. 2, 1967

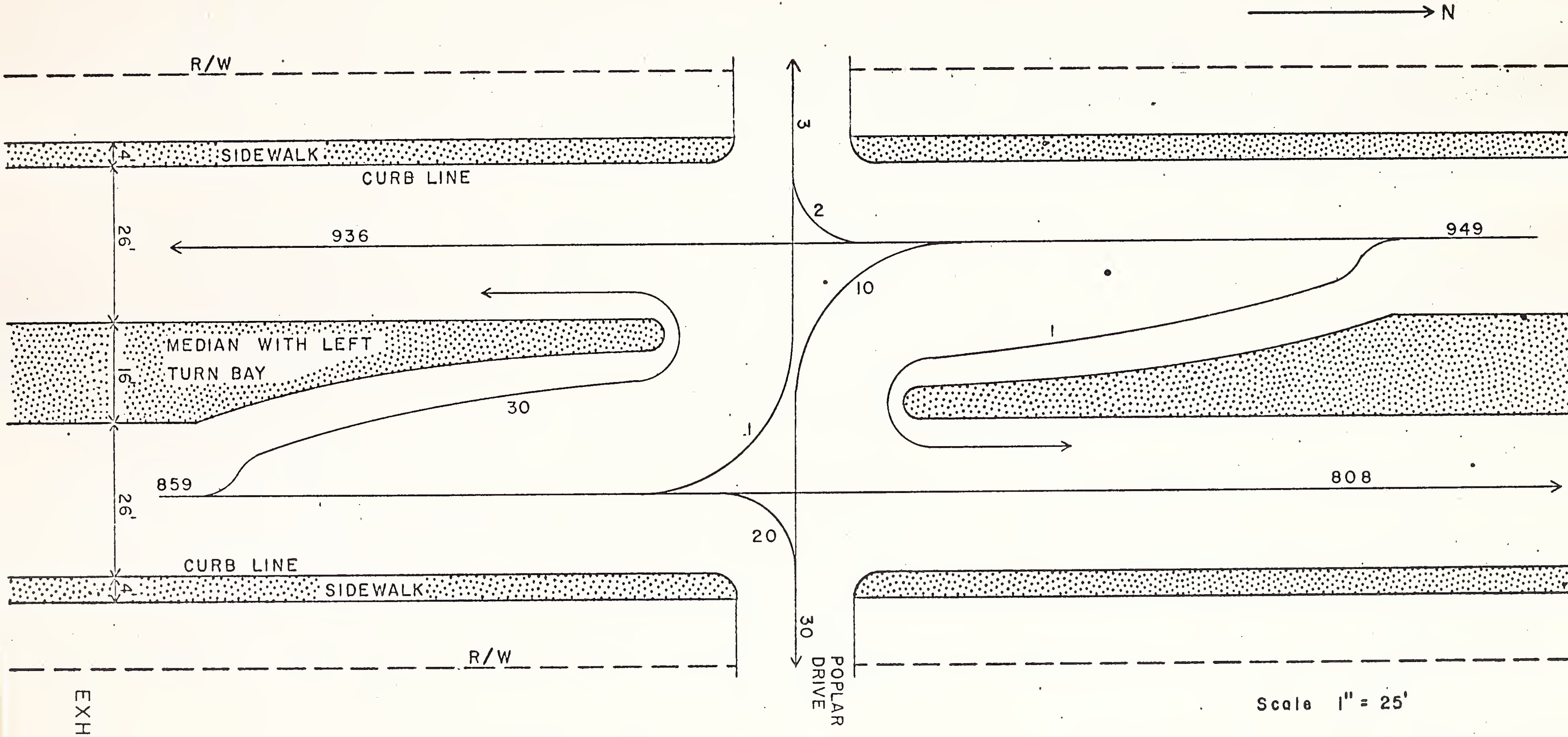


EXHIBIT 10

The overall accident rate on the four-lane section was 2.7 accidents per million vehicle-miles of travel during the five year period from 1962 to 1966. This rate can be compared to Statewide averages of 2.2 on the Interstate System and 2.6 on the Primary System during the same 5 year period. Accident rates on the Federal Aid Secondary System have not been computed on a Statewide basis during the past five years.

The results of the various studies, that have been made on the four-lane section of the LaSalle Road, all indicate that hazardous traffic conditions do exist on this section of highway. These conditions are caused primarily by the curbed medians which prevent direct left-turn movements on a suburban street section that is too narrow to provide the necessary width for U turns at the median openings. The comparatively large volume of U turns on this facility are the result of vehicles not being able to "drive around the block" on parallel streets to reach destinations on the opposite side of the median. The lack of a uniform grid system of streets in the Evergreen District seriously hinders the present four-lane facility from operating safely and efficiently.

The following solutions to the safety problem on the LaSalle Road have been considered.

1. Widen the existing roadway approximately 20 feet to provide parking on both sides, except near median breaks, ample width for U turns at intersections and increased width for right turns into private driveways. This widening would solve most of the traffic and safety problems that are now apparent but the cost of this improvement would be almost prohibitive.

The Right-of-Way and Preconstruction Divisions have submitted the following estimates for an additional 12 feet of right-of-way that is considered necessary and the construction costs for widening the existing 4-lane roadway an additional 20 feet for approximately 2.0 miles.

Additional taking of 6 feet of right-of-way both sides and widening 10 feet on both sides.

Right-of-way	$ 186,750.00
Utility Relocation	63,250.00
Total Right-of-way	250,000.00
Construction costs	184,250.00
Total cost of widening ten feet on both sides	$ 434,250.00

Additional taking of 12 feet of right-of-way on west and widening 20 feet on west.

Right-of-way	$ 154,500.00
Utility Relocation	23,500.00
Total cost of right-of-way	178,000.00
Construction costs	135,400.00
Total cost of widening 20 feet on west	$ 313,400.00

Additional taking of 12 feet of right-of-way on east and widening 20 feet on east.

Right-of-way	$ 124,000.00
Utility Relocation	40,000.00
Total cost of right-of-way	164,000.00
Construction costs	135,400.00
Total cost of widening 20 feet on east	$ 299,400.00

2. The second solution that has been considered is widening only at the 10 intersections as shown in Exhibit 11. This plan will provide the necessary width for vehicles making U turns from left-turn-bays, but it will not, however, be of any assistance to those vehicles making right turns into private driveways, or provide curb parking space.

The estimated cost of widening in one or two quadrants as necessary at 10 intersections is $16,250.00. It is estimated that this widening can be accomplished within the existing right-of-way.

3. A third possible solution to the traffic problems on the LaSalle Road is the removal of the existing curbed medians and the substitution of either a 4 foot or a 14 foot painted median as shown in Alternates A and B in Exhibit 12.

The four foot painted median would allow two 12 foot traffic lanes and an 8 foot parking lane on both sides. It would also permit vehicles to turn left directly into private driveways.

The disadvantages of this type of operation are that the opposing lanes of traffic are not positively separated as in the case of the existing curbed median and there is exposure to rear end collisions by vehicles stopped in the inside traffic lane while waiting to make left turns. Painted medians would also be covered by snow during certain periods of the year.

Exhibit 13 illustrates the possibility of substituting a 14 foot painted median for the present 16 foot curbed median and utilizing the

14 foot median as a two-way left turn lane. Parking would still be prohibited but the 14 foot painted median could be utilized as a two-way left turn lane for both north and south bound vehicles. This operation would eliminate the need for U turns and would also provide a sheltered area for vehicles waiting a break in opposing traffic before turning left into private driveways. Adequate signing would have to be installed to indicate the median was reserved for left-turns.

This type of two-way left turn lane was originated by the City of Seattle in 1952. It has since been installed on numerous streets and highways in Washington, California, Pennsylvania, and Georgia, and is now operating successfully on suburban roads and streets carrying from 5,000 to 35,000 vehicles per day. The accident experience to date has been exceptionally good with a significant reduction in rear end collisions.

The principal disadvantage of the two-way left turn lane is the fact that a painted median would be covered with snow during certain times of the year and thus some confusion may be experienced by motorists who are unfamiliar with this type of operation. A high percentage of motorists that use this road are, however, residents of the Kalispell area and it is believed that proper signing could alleviate any confusion that may be experienced.

The removal of the present curbed medians and replacement with painted medians with proper signing for two-way left turns would definitely be the cheapest of any of the proposals considered in this study. It is estimated that this proposal would cost approximately $10,000.00.

LA SALLE ROAD S-7 (6)
POSSIBLE INTERSECTION TREATMENT

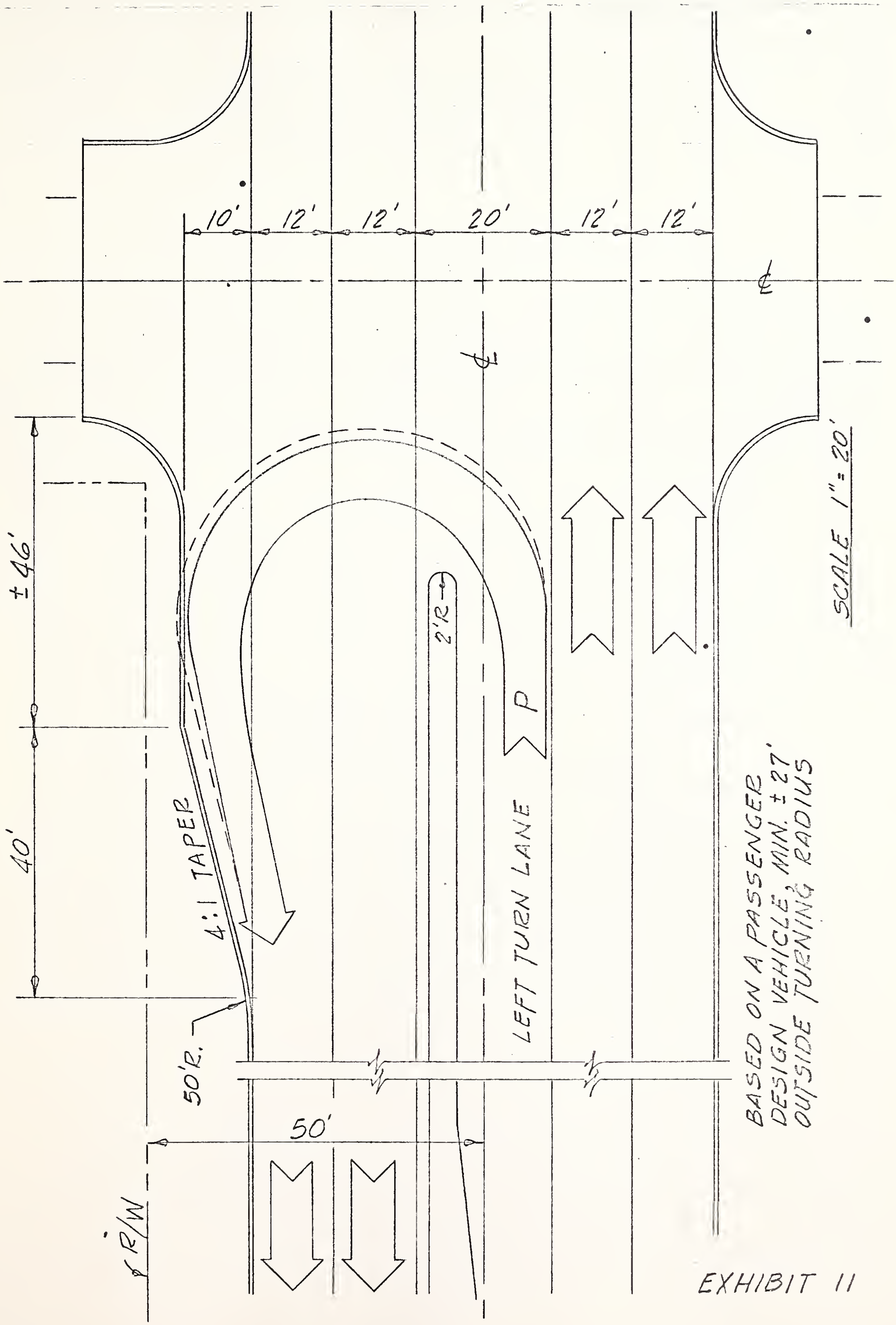
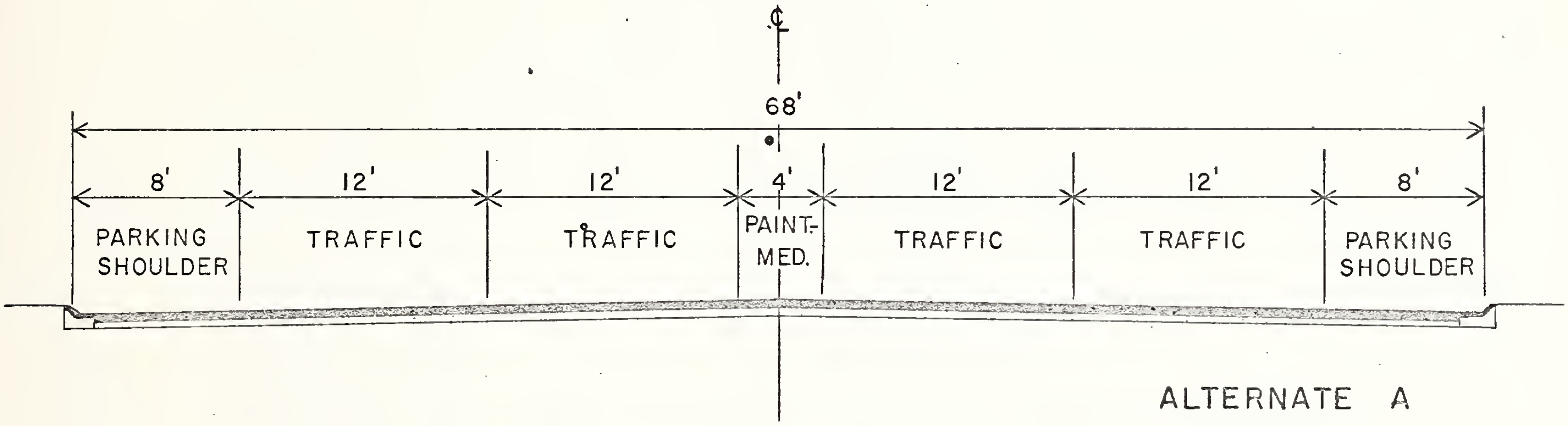


EXHIBIT 11

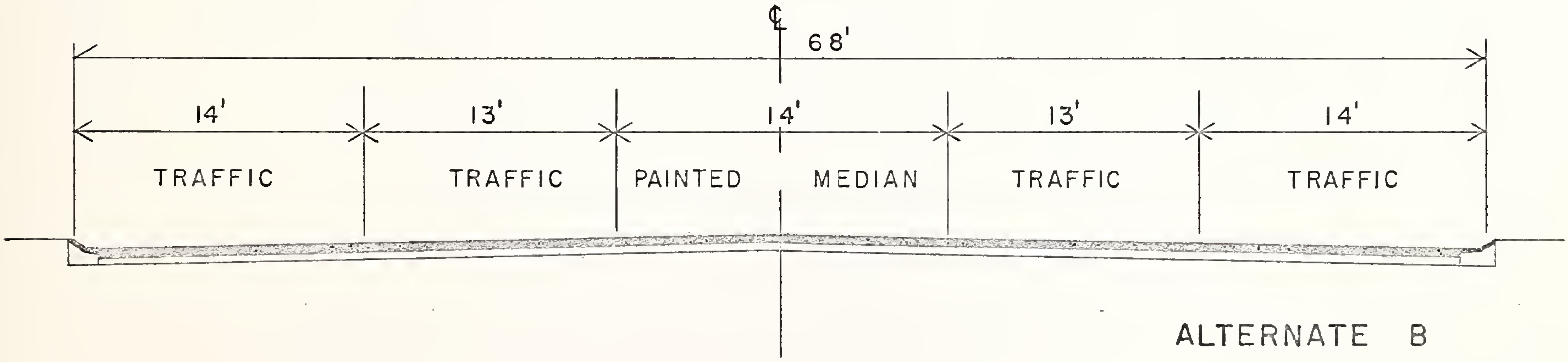
LA SALLE ROAD S-7(6)

POSSIBLE MEDIAN TREATMENT
FOUR LANES WITH PARKING
PAINTED MEDIAN



ALTERNATE A

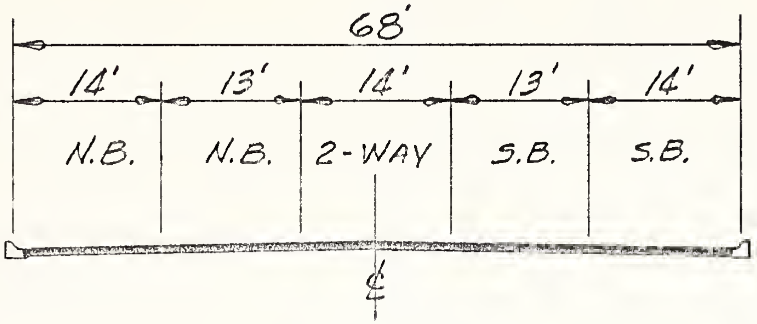
FOUR LANES NO PARKING
PAINTED MEDIAN
WITH OR WITHOUT DUAL LEFT TURN LANE



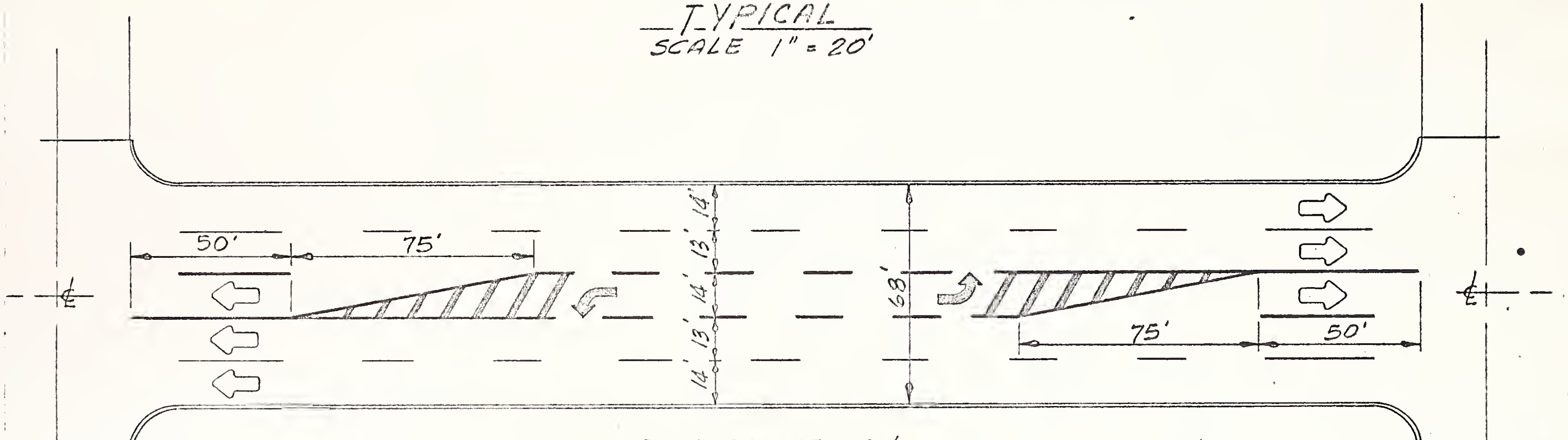
ALTERNATE B

EXHIBIT 12

LA SALLE ROAD S-7 (6)
TWO-WAY LEFT TURN LANE



TYPICAL
SCALE 1" = 20'



PAINTED MEDIAN

PLAN
SCALE 1" = 50'

EXHIBIT 13

Due to the fact that there is no uniform grid in the Evergreen District and it is, therefore, necessary for residents of the area to make numerous U turns around the present curbed medians, it is recommended that the present medians be removed and the four-lane roadway be striped and signed to permit two-way left turns from the painted median, as illustrated in Exhibit 13. This recommendation is concurred in by our Preconstruction and Traffic Engineers.

This recommendation should not be construed to cover all curbed medians. The situation in the Evergreen District is considered unique for the reasons mentioned in this report.

If this recommendation is adopted it is suggested that a study should be made of the traffic flow and accident rates after the two-way left turn lane is placed in operation.